



Orientation of IT towards Human Being

An informationscientific Paradigm

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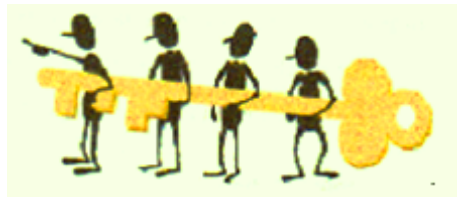
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“Even if you see a very high mountain before you - for climbing on a difficult way - you start by o n e step.”

(old wisdom)

For my daughters Clara and Isabelle!



1. Abstract

Coming from object orientated Software Development the word *Orientation* is reused here and brought to a higher level of Information Sciences.

Two *Orientations of whole IT* can be seen. One is consequent new: from Computer or Machine to Human Being and the other is traditional: from Human Being to Computer or to Machine. Orientation of IT towards Human Being is bordered by Human Being; that one towards Computer or IT has no technological borders in future.

For first time a worldwide unifying definition of terms Information and Data is tried. Its importance is documented by the topic "*Information Scientific Axioms*".

In second part – based on it – *Clues of every Information Evidence* are written down. They are a description as they are in real nature. Out of them many relationships to other sciences are possible. They don't have to be redefined or invented new.

Finally the author asks: „How we can get Information precious for Human Being? “. This brings a new, elegant and scientific point of view into future of IT over coming decades.

2. Key Words, Search Items

Information Sciences, Informationscientific Axioms, Information as term, Orientation of IT as paradigm, Theory of Systems, Relation, Relationship, Attachment, Attention, Bond, Regard, Vigilance, Alertness, Awareness, Readiness.



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4. Introduction

A lot of supposed over strengthening in public health is the reason for this research paper. Information Science doesn't want to give a pragmatic concept for healing. That's the duty of Ergonomics and its new profession: Ergonomist or Specialist in Occupational Medicine. Existing diseases in organic or psychical way - caused by wrong usage of IT (Information Technology) in office and private - can be healed by them.

In this paper a preventive method is tried and clues are given. Beneficiaries can be purchaser, developer and user of IT systems and media. Intrusion of IT in all human scopes of profession and private life is a given fact. Latest investigations in Psychology and Sociology try to find out its manifoldness. They make interviews with all groups of people. All already existing results are useful and very actual.

In this paper the new questions are asked: How can we organise IT and mediatechnology by their own - to prevent damage of human beings? Is this possible? The developed paradigm is a first general try.

The found terms are not new, they all already existed, but were in danger to get lost, forgotten or ignored. The terms Data, Information could be defined in the last years nearly unifying for all sciences. Only Theoretical Physics seem to keep its special definitions (since SHANNON). The new science of Information (= Information Sciences) gets useful. The indispensable dominance of the Human Being in IT is condignly (because really based) highlighted.

A networking of informationscientific results can be done in a rich amount. Beside Mathematics, Physics, Informatics additionally the sciences Psychology, Sociology, Communication Sciences, Systems Theory and Philosophy are important.

5. The new cognitions as paradigm

The paradigm „Orientation of IT towards Human Being“ can be shown in three great chapters:

- The **Axioms in Information Sciences** are an empirically found, fundamental and general entry.
- The **Clues of each Information Event** present a unified and permanent usability in Information Sciences.
- Finally the question is asked: **How gets Information precious?**

5.1. „Axioms“ in Information Sciences

The line of thoughts leads **bottom up, out of praxis in IT for decades**, up to **genuine theory (Philosophy, Information Sciences)**. The mental cut-set is scientifically good useable, even historically effective. The formal using of the term Axioms is nature scientifically, factually founded. Information Technology (IT) by itself is the source. Physics and genuine immaterial software design are final fundamental bases.



A philosophically-logically proof of these single axioms among themselves is not reasonable. They are single “true assertions“. Their contents are in our Age of Information - using the

words Information, Data, Subject and Object in very manifold ways – a welcomed clearance and help. They are in their form new.

5.1.1. Informationscientific Axiom 1 (IA1)

Data describe an Object.

Data in common are divided in only two groups:

- a) stored, materially existing, „dead“ Data
- b) „living“ Data, in living data carriers = Organisms.

Only one subset between a) and b) can be seen as „1:1-Data“, „Natural Data“ or „Documentations“ (f. i. Documentary Films, Nature Films, Original Voice Storages).

More structuring does not make sense on this level. It would be too complex because all Data of all existing IT applications or Objects in our time can't be organized in one unifying way.

Acknowledgement: Data themselves can be seen as Objects of our perception (f. i. documentations) too. That makes sense if no Object is existing, only Data about that.

5.1.2. Informationscientific Axiom 2 (IA2)

Information is that content of an Object which is interesting for a Human Being.

This term „Information“ can be used by this assertion (first time) unified – historically and actually. The relationship is logically definable in form of an **Indirect Conclusion**:

If a human being is not existent or involved n o Information is created.

Human being is in this connection a synonym for every living Subject – reduced to his evolutionary level.

Information is so only that what a human being can recognize by his senses, what he can think about and what he can send to his surrounding in any way. Information doesn't have to be defined exactly but has to be an existing „something“, which is recognized by a Human Being.

First scientific result: Data and Information are exact distinguishable.



5.1.3. Informationscientific Axiom 3 (IA3)

The value of Data is defined by the Information included in them.

Acknowledgement: Objects only can be Data too (f. i. if only Objects and not yet Data are existent).

Great advantage of all three axioms is their generally usability in all sciences – even in Physics. SHANNON's theory of Information gets so to a special „Data numbering“.

For more background look into **PLOCHBERGER Franz (2013)**.

Out of them follow the

5.1.4. Informationscientific Postulates (IP)

➤ **IP1: Human Orientation (HO) of IT**

Is a direct sequence to IA2 (necessary relationship to Human Being). User Centred Design (UCD), ISO 9241, Human Computer Interaction (HCI), Ergonomy et al. are existing terms in actual IT, but I think they are not enough general and targeted. Human mind and soul had been “conquered” by IT. We need therefore a paradigm change in IT. The little steps coming from market are too small. The Human Being in his cognition-evolutional, biological borders has to be centred Information scientifically consciously - as most active agent and as single deciding and creative part of IT. This postulate led exact to this paradigm at hand.

➤ **IP2: Observation of Continuity as Property**

It comes from human Organisation (in the usage of C. MATURANA) and from human way of agitation. Human nervous systems and blood circuits as most important carriers of „living Data“ in human organism are genuine continual. They are flowing life. This property is actually totally missing in Information Sciences, f. i.:

- at *incompatible changes of Hard- and Software*; a great economic additional expenditure is founded and rare raw materials are wasted (consciously planned obsolescence) or
- at *long termed storage of electronically Data*; uncoordinated, technologically new equipments are necessary; they are extensive and incontinuous or
- at *sociological changes in working world*; they get stronger by wrong usage of IT. A crass consequence is that permanent unemployment und growing difference between poor and rich are existing facts of our high technological industrial society. No sociological counteractions are started even if they are easier possible than before IT.



➤ **IP3: Usage of word Information in Science**

Using this word in scientific connection has to bring soon more exactly definitions of a new found situation and every time a new term has to be differentiated. Otherwise a new found fact will be forgotten in short time or only a verbal surrounding will stay by using only the word Information.

This word will be used at every moment of discovering something new. A conscious contribution should arise and a deeper mental reasoning should be activated. Information by itself is „only something new“, not yet a new term.

6. Discussion of Information scientific (IS) Axioms

The real value of these „Informationscientific Axioms“ (IS-Axioms) can't be evaluated high enough. Information and Data get clearly differentiable as they appear in real nature. Information as known term since time of Romans stays continuously. SHANNON's Theory of Information is now pointed out as too narrow. It's a set of genuine mathematical formulas in the theories of transmitting of electronically signals.

The indispensable relationship Human Being - Information is the kernel of these axioms. Therefore the term axiom was used. So the nature scientific importance is pointed out. No proof is necessary - only acceptance.

The postulates - following them - are some general first examples for using these axioms.

7. Clues in every evidence of Information

Genuine cognitively these clues are control points, topics and abstracts. This cognitive method by generating new terms is well known to us and very useful in every new complex surrounding.

Every procedure, flow or evidence of Information is happening between *Subject(s)* und *Object(s)*. *Subject* and *Object* as terms where used already in classical, antique philosophy. An *Object* is any item or matter which is recognized by a *Subject*. An expanding variation is the possibly permanently spatial inversion of the direction of Information. Therefore a Subject can get an Object and an Object can get a Subject. Subject and Object can be single or in many variations.

Besides a sentence of Paul WATZLAWICK (1921-2007), an Austrian-American Communication Scientist, Psychotherapist, Sociologist and Philosopher is valid: „*No (living) Human Being is able to communicate not*“. Token to our Information procedure: The (living) human being is permanently part of any procedure or flow of Information.

All clues in an Information event can be written down as



- biological and mental state of Alertness, Regard or Readiness,
- Attention or Wake Up Call,
- Relationship, Attachment (Bond) and
- Information Exchange.

7.1. Biological and mental State of Vigilance, Alertness, Regard or Readiness

We need first the *vitality* as biological state. It's banal, but genuine Information scientifically a *living* human being (or an evolutionally reduced form of a *living* entity) only is able to get, treat and send out Information. A dead Human Being is only a dead Object in a special form and with defined properties. Simple example: only a living animal is able to recognise a dead one. Or: A never found human corpse is no source of Information, because nobody (no living entity) knows it. Think on definition of the term „Information“ in axioms above.

The *biological vigilance* of a human being is important next. It's self-evident that a *sleeping* Human Being is reduced in his ability to treat Information because his body and mind is in a reduced and refreshing state.

A higher and a little bit more manifold form after vigilance and alertness is human *wakefulness or mental openness*. *Mental readiness* and *mental ability* of a Human Being are next important factors for amount and value of Information. Details are consciously not worked out in this paradigm; they are subjects in Psychology or Sociology.

Out of Philosophy a well known term can be used here: *the Being* (first time found by ARISTOTELES) or *the Existence* of a living Human Being.

That's information scientifically enough for our paradigm. A deeper differentiation would go beyond the scope and poise the goal.

7.2. Attention or Wakeup Call

Human existence is signified by a permanent, biologic-sensual and mental activity – the human brain and the human nervous system transport permanently electro-chemical signals and biological messages and messengers.

A single transport of Information *starts by an impact from outside or from inside the Human Being*. The Subject Human Being notices both *consciously*. All unconscious reactions or impulsions can be categorised in IS (Information Sciences) as *biological Data transport* (PLOCHBERGER Franz (2011), p 9). Only a conscious recognition of such procedures creates genuine Information.

The *consciousness* is basis for evidence of Information. If it's missing we call it an unconscious or subconscious incident. This is excluded explicitly in this paradigm. It belongs to Neurology or Biology.

It's not recommended in IS to call an evidence of Information a “process”. This term is too technically or juristically. In IS it's better to use the words: procedure, event, evidence or flow. So the biological and not technical background is better signified.



If we want to describe a procedure or evidence of Information in time or space we have to have a definable *beginning*. We call it *attention* if a Subject is turning himself and his mind consciously and sensually to an Object. Or we call it *wakeup call*: then a Subject gets an Object and out of himself gets recognised by another Subject.

At all these Information flows *the Human Being has to be seen as one whole entity consisting of body and mind, with all his perceptions by his senses and abilities.*

The flow of Information can be divided by more than one sender or receiver. In that case the intensity or amount of Information is split too. Mihály CSIKSZENTMIHALYI (born 1934 in Rijeka, Croatia, living in USA), a well known positivistic Psychologist of our time, could point out, that the Human Being is able to communicate in best way with *o n e* human dialog partner – maximal with *t w o* (**CSIKSZENTMIHALYI Mihaly (2004), second half**).

A scientifically deeper going work about attention is (**CHUN, GOLOMB, TURK-BROWNE (2011)**). On p 77 ff he makes a fine difference between External and Internal Attention – similar to the terms attention and wakeup call in the scriptum here.

7.3. Relationship (Relation), Attachment or Bond

In IS (Information Sciences) we can take it from logical mathematics. There it's called *relation* (from Latin *relatio* relation, relationship). Genuine topologically *2 or more points* in a plane or in a room can have a *relation* between each other. This *relation* exists or doesn't exist.

In an expanded way a *relation or relationship* can be seen as sensually cognisable connection between Subjects or between Subjects and Objects.

Information can't exist without Human Being. In Psychology, Sociology, Communication Sciences or Economy the term *relationship* is well known and has an important, fundamental meaning. That may be sinful in Information Sciences too.

A mentally deeper going term is *attachment*. It includes an additional feeling and emotional meaning. It can be genuine psychologically in a single Subject Human Being or socially between Human Beings. It can be genuine *on the surface, for a short time*, can go *deeper into consciousness, can exist for a long time* or can even *stay for whole lifetime*.

It's meaningful in IS to differentiate these new found terms a little bit more in

- social relationship and attachment *between Human Beings* and
- relationship *between Human Being and machines, computers or media.*

7.3.1. Social Relationship, Attachment between Human Beings

In Sociology (f. i. **DÖRING Nicola (2003), p 405**) and Psychology (f. i. **TRIMMEL Michael (2003), p 93-96**) the social relationships and attachments – between Subjects – are treated extensively and detailed. This is done in an interesting way in both sciences nearly in the same meaning.

Social Relationships (between Subjects) can be differentiated

in their function in



- **formal (factual)** and
- **personal relationships**

and both *in their subjective meaning* in

- relationships with **strong (narrow)** and
- relationships with **weak (loose) attachments (bond)**.

a) A Formal Relationship

exists between Subjects which are involved in *Systems of Functions*. These single Subjects have in themselves preset duties and roles and are supposed under *one main goal* (f. i. political agitation of opinions, economical profit or public administration). All involved Subjects are organised in a preset *hierarchy*. Personal relationships (f. i. Sympathy or antipathy) are consciously reduced. Formal relationships and transport of Data, goods and orders are important. All together serve a higher goal.

Depending on duration and mental depth of a formal relationship there exist

α) Weak (Loose) Attachment

f. i. customers, colleagues at work, political party members, state residents

β) Strong (Narrow) Attachment

f. i. experienced working colleagues, committed political party members, active state residents, regular customers or physician-patient-relationships,

b) A Personal Relationship

In this formal roles and clichés are hindering. The relationship gets more free, manifold and first of all more human. Counting values are: sympathy, antipathy, trusting. The relationship by itself is cultivated.

In mental depth we talk here too from:

α) Weak (Loose) Attachment (Bond)

f. i. neighbours, loose contacts

β) Strong (Narrow) Attachment (Bond)

f. i. parent-child attachment (bond), friendship or long-termed love attachment.

This disposition can be used very welcomed in IS. It's a structured, general meaningful arrangement. More detailing is negotiated consciously here. It would destroy the paradigm in its general goal.

7.3.2. Relationship between Human Being and Machine, Computer or Media

This *relationship* is important in the whole here created paradigm. It has been researched since beginning of Information Technology (IT) in about 1950 by SHANNON, ZUSE, VON NEUMANN or since beginning of IS by finding of worldwide Internet in 1989 (Tim BERBERS_LEE).

The very common relationship between Human Being and machine has its roots earlier in beginning of US-American industrialisation of human machine working processes. **Frederick**



Winslow TALOR (1856-1915) started to research this working area systematically. The result is well known as „Taylorism“.

On one step further the next new fact was founded in USA during the 1st World War. In US-America research of working processes went on. Especially the relationships between solders and (weapon-) systems (Human Being - machine relationship) was started to be researched scientifically. The term „**Human Factor**“ (HF) was created. Some medicals and bachelors tried to find new mathematical and systematically rules. The knowledge of

engineers building aeroplanes or boats was combined with knowledge of Psychology (f. i. amount of errors, necessity and organisation of professional trainings). See in: **MEISTER David (1999)**.

This way of thinking was continued after 2nd World War in western nations: England, France, Germany and last not least with political attributes in Sowjet Union. They started a continuation in civil working world. So a new science was created: **Ergonomy or Occupational Medicine**. Today even a new profession is created: Ergonom or Occupational Physician (a combination of engineer and physician). In most universities this knowledge is taught today.

This present paradigm is a continuation of these researches in IS and IT. So a new general and scientific way into development of future IT and media should be found. The *Orientation towards Human Being* is necessary because the Human Being in his whole biological evolution has a very slow change time. On the other side the technologically cognitive evolution is very fast and gets manifold more and more – with no end.

Every *relationship* between Human Being and machine can be seen as relationship between Human Being and an user-screen. Nearly all complex machines have on her user-surface an electronically user-display.

The *attachment* is till now not yet researched exactly. It appeared not yet in MCI (Machine Computer Interface) - or UCD (User Centred Design) – research. It's used here for first time in IS.

The relationship between Human Being and machine and especially Human Being and computer and media is definable as *formal relationship* (orientated to a goal or purpose, given by a special Human Being – the owner of a system).

The created *System* is a *System of Functions*. Every *Function* has its predefined duty. All *Functions* serve to a *Main Goal* which was preset by the *Owner* or *Purchaser* of a system (f. i. state, bank or trading office). It can be:

- closed: Subject uses a programmed and tested IT-Application,
- open: Subject uses WWW or a Social Network (Facebook, Twitter).

The *attachment of a living Subject Human Being* is bordered by human biologically and mentally senses. Treatment of them can get singularly to heavy. That can create *addictive behaviour* (**DÖRING Nicola (2003), p 304 ff**). These and other dangers should be prohibited by IT and Media. Till now we have no solutions. Only commercial factors control the design of new developments. Developed will be what can be sold.

We have to see the Human Being generally (= biologically and mentally)

- on one side as **real Creator of IT** and



- on the other side **as Border of IT and Media.**

Last point is not yet recognised enough.

Into direction of IT and Media - on physical technologies – a real infinity can be seen in future too.

Here the other possible direction – into Human Being – has been started in a selective and conscious way.

7.4. Information Exchange

Here exchange of genuine Information is treated. Not every started Information procedure can be finished under the same conditions as started. Each of them can be substituted in short mental speed – speed of human consciousness – by a new, more interesting event.

All till now described steps (Awareness, Attention and Relationship, Attachment) appear always. They are necessary in every flow of Information.

Acknowledgement: Here too it's recommended to keep a general level. The existing manifoldness and complexity of this events can be better explained in other sciences (f. i. Psychology, Sociology or Communication Sciences).

Every genuine Information exchange can be differentiated in

- genuine subjective winning of Information,
- subjective steering, control and using of IT applications,
- communication and
- cooperation.

7.4.1. Genuine, subjective Winning of Information

The Human Being wants to win genuine factual Information. A *flow of Information in direction Human Being* is the goal. The Subject Human Being can analyse found Data or Objects, perhaps reorganise and store them individually. He or she can use Software and Hardware as tools for storage of texts, sounds or pictures. The technological organisation form of WWW (Worldwide Web) is f. i. the largest existing Data pool. By worldwide unified standard address forms not countable storage locations can be tapped.

Between Human Being and computer or media a *formal Relationship* is valid. An *Attachment* of a Human Being is avoided in this case because it arises unconsciously only. It can reduce the human behaviour in an unrecognised way or even dispossess his consciousness from his habit. That can evaluate to a sick addiction (**TRIMMEL Michael (1994))**.

On the other side *organisatoric knowledge („Know How“)* can be built up consciously: f. i. how informative Data sources can be reached. The best known example for this is Wikipedia which is organised by Key Words. The **Topic-Thinking or Key Word-Thinking** has got much more important by this Software.

It has got important to organize the used amount of Software and Data by yourself. **Data Mining** has got a new topic in IT. An access of an **unlimited amount of Data** is possible



now. **The personal assessment and judgment of the quality of this great amount is a new mental challenge.**

The cognitive treatment of **Knowledge Acquisition** has been changed by IT in a fundamental way. Found Data can be easily reorganised and they are easily restorable in single individual manners. Maintenance of Data *brings motivation* to win out of it as much Information as possible. The won new Information can be carefully stored as worthy **individual knowledge**.

One legacy treatment in Knowledge Acquisition is the **Repetition**. We need enough time for it. Winning of time is not important in this case. We stay Human Beings – with computer or without computer. Our brain can't work faster if we learn new Information out of new Data. A *repeated access* has got easier and faster. But the Human Being has to take consciously time to organise the new Information in his mental **Memory**. **Joy about new learned knowledge** has to come up. We need the feeling that the heavy work of learning has reached its goal. Our new learned knowledge brings this joy if we can represent our new knowledge in our social society.

Arising *stress* must be changed every time in *Eustress*. This has to be intended more consciously if the amount of Data and their complexity is growing. Not caring of these facts brings a mental regression even by using latest IT-Software-Tools for it. Fascination by a technological update is no worthy substitution.

7.4.2. Subjective Steering, Control and Using of IT-Applications

This form of Relationship between Human Being and computer has been the original one before Internet. The Human Being steers a Software Application beginning with its ordering and design till its using and permanent maintenance.

It's characteristically that the developing *IT-Specialists* are a lot higher motivated than the IT-Users who get educated in the finished product.

Economic earnings of every IT-System with its Users and its Maintenance Personal come finally by its using.

The won joy after the creating phase is on side of Owner and User. **This joy of creativity changes to a joy of economic profit** (f. i. an Online System of a Bank or an App on a Smartphone).

In all cases flows Information into two directions:

- *from Subject Human Being away* in form of steering and control of an IT-Application and storage of Information in Data in Hardware-Media and
- *into Subject Human Being* in form of machine-made result Data containing easy understandable Information (text-forms, sounds, graphics or pictures).

7.4.3. Communication

is a two sided, interhuman and social event. It fits exactly to the inborn human ability for communication. The positive impacts on two communicating persons are worthy mental benefits. Only a possible negative Information content in this communication is able to



demotivate the dialog partners. But in that case the negative value will be tried to get reduced in just the same dialog.

The modern electronically technology has *changed the form of communication*. In parts it has got better, but seen from a human point of view it has got worse too.

Improved have been f. i.

- the *possible spatial geographically distances between the dialog partners*, factually all over the planet Earth and outside of it or
- the easy establishable *small meshed network* between all possible dialog partners.

In parts the informative impact has been reduced by usage of selective speech in Telephone or only letters in Emails. These have been technologically revolutions in their creating time. But today they are much used facts which also decrease the interhuman dialog quality. They are uses very much. The not used human senses in theses dialogs are open for uncoordinated and unrelated impressions. The permanent usage of Telephone and Emails gets so side effects which can possibly reduce the genuine compounding benefit of Information winning.

Smell and taste is not (yet) communicate able.

Combined forms of Data transfer – like Videos – make optically and acoustically communication at same time possible. This communication form is nearer to the naturally, direct interhuman form of communication and therefore richer in human Information. Personal Relationships and deep Attachments (Bonds) can be built up better. They can get maintained and long termed – we say Information gets “human precious”.

By technologically necessary storage in Data form appears some uncertainness in connection to confidence and truth of “*personal Information*”. In most cases a lot of technologically work and costs is appearing by confidential transport of Data. In reality the western states and state-communities have created their own laws for Data protection. They defined person-related Data as signified amounts. But till now not enough laws *between* states are valid and these laws have not yet their power (f. i. between EU and USA or Canada and inside these communities). Our leading western industry society is actually not able to protect person-related Data confidentially.

Last not least we shouldn't forget legacy human character- and intelligence-properties. Every change of media technologies can also be used in a criminal way if the using society can't protect herself against this fact at every time. Deeper going investigations in Ethics, Sociology and Communication Sciences will stay important in future too.

7.4.4. Cooperation

is the most complex and rich form of human work together. It needs

- active coordination of whole body (including muscles),
- trained stuff in using equipments (physical world of working, machines, computer),
- Formal or Personal Relationships,
- existing (interhuman) Attachments (Bonds),
- exchange Objects (in some cases only Data) which fit together and
- subjective abilities and skills which are coordinated.

If these points are observed a community of cooperating Subjects can be built. This community is more than a crowd of single individuals. Arising competition intern in this organised community – even as sporty ambition – has to be reduced. A cooperative, **unified**



and positive thinking is the precious goal. It's a heavy mental work to motivate all members of a good cooperation.

So forms of Relationships on a high level get valid. They include Sociology and Business Management. Despite existing most up to date Media it's difficult to reach a positive cooperation and to keep it for a long time.

To reach this goal are important

- a personal structure of fitting skills and abilities,
- socially trimmed members,
- a subtle leading of them and
- satisfying, correct gratification of single (bodily and mental) efforts.

The most precious value in such cooperation is **the interactive confidence**. It can be reached over many interhuman dialogs. Much patience and experience has to be in these human cooperation structures and they have to be cultivated.

IT and Media are today common tools in these structures. It's important that **every member gets individual training and gets carefully upgrading of his individual skills** if new equipments are involved.

This was the last clue in our new found paradigm. More refinements can be found in already existing sciences. This paradigm is an orientation for the future of IT. **Information Sciences** have to get more human in order to stay valuable for a long time. IT and Media will change in very manifold ways. These clues will be valid for ever because they are orientated towards Human Being and are organised for the well-being of all people as long as they exist.

8. Discussion of these Clues

The amount of clues is per se one of many possible elections. No complete result can be reached. But every single clue is a genuine help in treatment of any evidence of Information.

Informationscientific-historically the degree of subjective human (co-)operation has been named *Human Factor (HF)* → MEISTER David (1999) in **PLOCHBERGER Franz (2014-1)**.

8.1. Discussion of biological and mental State of Vigilance, Alertness, Regard or Readiness

That's an often used clue in Philosophy, Biology, Psychology, Social Sciences or Communication Sciences. It's elegant to let it in the area of these sciences, because it has been and is researched many times there.

Its importance in Information Sciences is that a permanent State of Being of a Human Being - as individually living Subject in nature – is signed out. We could say: existence per se is so a separate topic.

8.2. Discussion of Attention or Wakeup Call

This can't be seen as a permanent state. It's a *single, mental event or change of situation*. For deeper researches again Psychology, Sociology or Communication Sciences are guiding on.



In Information Sciences *Attention* or *Wakeup Call* are **points of beginning of temporal or spatial flow of selective Information**. The decision for permanent exchange between two or more dialog partners comes from the involved Subjects themselves. They can decide in every moment to start a new - more interesting - dialog. The old one has no importance since that moment.

8.3. Discussion of Relationship (Relation) and Attachment (Bond)

Those are newfound most worthy terms in the evidence of an Information event. They are valid in Psychology and Sociology too – in the same importance.

Genuine mathematically the term *Relation* is important, f. i. in constructive way of thinking in Software-System-Design in Information technology (IT). Physical Machines (here named Hardware) need in the phase of their development pragmatically fixings (f. i. BOOL Logic or binary systems of numbers). A *Relation* defines a Relationship as mathematical factum which exists or not. It's very helpful in connection with physical storage of Data (structures of sets, number pairs, vectors or n-tupels and compounding of all of them).

In Information Sciences we have got so by these terms (Relationship, Attachment) really unique and unified defined one. They make the enlarging of Information Sciences with human needs easily possible. The Human-Computer *Relationship* can be defined so more elegantly. The Human Being can be integrated f. i. more human and efficient in a *function system* consisting of physical equipments and Human Beings. The term *Attachment* makes a clear differentiation possible between human, biological and genuine physical terms. It's wanted between Human – but not between Human and machines).

These terms are better defined in German: Relationship = Beziehung and Attachment (Bond) = Bindung. The terms in English are not unified - in German they are.

8.4. Discussion of Information Exchange

Information as defined unified in above Axioms is the value which is investigated by Information Sciences and is treated and stored automatically in form of Data in Information Technology or Informatics.

Only the Human Being is able to accept Information (from a Machine or from another Human Being). Only he is able to reason about this got Information. Only he is able to create new Information and give it to other Human Beings to transform it into Data and store it in Computer or Storage Media.

Information is a sign of life. All living creatures are – according to their evolutionary state – Information users.

8.4.1. Discussion of genuine subjective Winning of Information

The genuine subjective winning of Information is a high aim of every Human Being. Curiosity is a native human property. The more Information can be won the more satisfied a Human Being is.



By actual management of IT and Media we can recognise more Information than we can treat in facts. A reasoning about new Information needs a conscious *Attention*, an exact recognition, a *comparing* with knowledge in own *memory*. *Ability to assess the worth of Information* has to be a mental property. By this it's possible to *create new Information and to give it*.

The understanding of Information, the ability for arranging of Information is for every Human Being a positive, joy bringing event and is therefore desired ("Eureka Effect" or "Aha Moment").

It has to be explicitly recommended that the amount of stored Data for winning human Information is not finite. **The Human Being has to know what he searches and where he can find it.** By IT the possibility to access Data got very easy. At the same time the Human Being recognizes very soon the borders of his own mental abilities.

IT of future seems to be without borders. It's only notable that it must be a benefit for Human Being and shouldn't hurt him or her. Sociology and Ethics stay important.

8.4.2. Discussion of subjective Steering, Control and Usage of IT-Applications

Let us remember the rough differentiation from above: Information flows

- *from Subject Human Being away* in form of Steering and Control of an IT-Application and gets a stored form of Data in Hardware-Media (f. i. optic or magnetic storage records) or
- *to Subject Human Being* from Computer or Media out of the appropriate form of machine generated result Data.

Steering and Control of IT-Applications in our Computers or APPs on our Smartphones is a human motivating activity. He or she can „use“ something what is useful and the user has no effort by developing it. He gets a ready "tool".

The *Relationship* Human-Computer is genuine *formal* and shouldn't create a subjective *Weak or Strong Attachment*.

The organisatoric Know How in treatment of an application has to be learned at the beginning by training and is real knowledge. It rises by using a system („Learning by Doing“).

Result-Data of a Computer or any used electronic instrument should be as human organised as possible. A Computer is no Human Being. Unvarying formats, texts, sound files or videos are easy understandable forms of Data for a Human Being.

A positive human motivation is *creating of these applications*. What is necessary for doing it is a solid based knowledge. In earlier times of IT (1970 and later) this knowledge was trained by companies - today it's trained by Universities and Colleges.

8.4.3. Discussion of Communication

Interhuman social communication is the most human form of communication.



Today it's important to highlight it because we are already used to Media and IT. A support by electronic instruments includes in the same time a restriction of *usage of all our senses at the same time for the same problem. We should change all electronic Media in that way.* Our evolutionary developed abilities base on usage of all senses at the same time. Communication by Handies and Emails f. i. should be substituted soon and simple by Videos.

The useful terms *Relationship* and *Attachment* make us able to asses our modern Communication. A direct and personal Face-to-face-Communication – as best form - has to be still our goal.

Technical fascination by even highest up to date electronic instruments can't substitute personal human talks. As User of such instruments we shouldn't get headless suffers of up to date methods of professional advertising. They have as goal the commercial winning only and not the *winning of human quality of life.*

8.4.4. Discussion of Cooperation

Cooperation comes from Latin *co-operare*, what means „together-work“. In this case our whole body is involved. Every Human Being is challenged fully – with body and mind – and gets so his best success-adventures.

Coordination of many individuals beyond one common aim is a difficult and responsible work of personal leading. For this inborn talent and carefully training is necessary.

Interhuman Information exchange has been strongly condensed by new Media. It's much more difficult to hide own or even egoistic benefits. Social enhancements have to be protected against conscious-legacy power structures. We need a Sociology for better divided ownership and no more difference between rich and poor. All this structures should base as much as possible on **truth and confidence** and as long as possible.

Despite these clearly chances for a fairer and more human world the **dangers of misuse** have increased too. The possibility to prohibit Information or to change it is used very much too. We have to fight consciously by *more common technological easing*. Genuine **Information has no borders it's inborn to Human Being**. So it will be only necessary to enforce the positive Human power. Destroying intentions will be highlighted soon by our new IT - Society. But we have to motivate the positive thinking in future too (Ethics). If we can do this by free management without connection to commercial interests we are on the best possible path (f. i. Open Source, Open Science).

9. What makes Information precious?

It's a big benefit of this investigation that we can answer this question clear and considerably.

We can say now: Information is precious when a *Personal Relationship* between Subjects (Human Being or any living entities) can be created, made better and deeper.

Pure *Formal Relationships* base on Information about goods, money and structures. These relationships have to base on *confident and true Data*. They have to be *complete and consistent* too. Then we can speak of *precious Data* which include our *precious Information*.



Pure *Personal Relationships* are *precious* if they base on *confident and deep interhuman relationships*.

The term *Attachment* gives us *precious* answers too. A preferably *Deep (Strong, Narrow) Attachment* is very precious in a Personal Relationship. If an attachment is loose a manifold network between preferably as much as possible loose connected persons is precious.

But an *Attachment between Machines and Human Being* should be prohibited, because it appears unconsciously. If we recognise it we should reduce it consciously. What is *precious* in this connection we call *Know How*. This gives positive **on pure knowledge based feeling of self-worth**.

10. Discussion of „What makes Information precious?“

The term Information needs per se the Human Being as we know from above. IT as whole of all electronically devices for Data transport and Data storage serves generally this goal „Precious Information“.

Information has first of all a direct interhuman value. If it is sourced in a Relationship Human Being – Object it “gets its value” by the Human Being. It’s an inborn goal of the Human Being to get Information and to realize something special. This can be a pure formal material value (Information about found treasures, goods, new materials) or pure social interhuman values (Sympathy, Quality of Life, Joy and Trust).

Only the Human Being is able to asses Information. He or she only decides how to act in their surrounding according to their knowledge, feeling well and internal goals. That will stay in our Age of Information“ !. Machines and systems are helping equipments for the Human Being and never should be allowed to hurt him or her. We have to learn it consciously and remember it permanently.

These now new arising „Information Sciences“ have to promote the „Be like a Human Being“. They never are allowed to diminish our human species, kernel and kind – this is only possible in evolutionary time intervals by whole nature.



11. Final Consequences

It's worthwhile to develop a paradigm out of a set of terms which makes great connections of our present time understandable. This new paradigm opens an elegant access to IT of next decades in style of also new Information Sciences.

It can be shown that SHANNON's term of Information out of the 50th of last century has to be enlarged into more sciences today. SHANNON's Information is still valid as mathematically and physically term but has been seen wider today. We see it in Information Sciences as term about the probability of physically Data structures per se and their transport. HARTLEY - living in time of SHANNON has already found this problem and excluded it as „psychological considerations“ (**PLOCHBERGER Franz (2007,2011)**, p 6).

The mathematically-physically Information term has been enlarged in modern Information Sciences by humanistically (biologically, psychologically) and social areas. IT of our time has got so important in our whole world of work and life that we have to investigate more about Information and Data.

12. Compendium as Paradigm

A selected set of old and new terms in Physics, Mathematics, Psychology, Sociology, Philosophy, System Theory, Informatics and Information Sciences is set in relationship. The goal is to compound these terms in this paradigm as scientific base for the future of Information Sciences by fixing and showing of unified and clearing connections. Informatics or Computer Sciences are sciences of structures, Information Sciences research more

abstract and wider unified terms which have their sources in Human Being and whole nature.

In the first part of this paradigm consciously provoking „Informationscientific Axioms“ are formulated. The word „Axiom“ was chosen because *no additional mathematical proof* has to be done. It's usage is justified by it's factual and real appearance in present time.

The present unclear amount of meanings of the terms Data and Information has got unified and unique so. The value of this paradigm for IT and Information Sciences is not yet recognised by all scientists enough but will come surely.

In second part an „Information Event or Evidence“ is described in some characteristic clues:

- Biologically and mental state of Alertness or Readiness
- Attention or Wakeup Call
- Relationship (Relation), Attachment
- Information Exchange:



Genuine subjective Winning of Information
Subjective Steering and Control of IT-Applications
Communication

- Cooperation

These clues are a worthy amount of terms to get this Information event researchable. They always appear.

In third part a single question is asked: What makes Information „precious“? In this connection its elementary relationship to the Human Being is shown.

13. About Author

The education of the author is based on Austrian Humanistic Gymnasium (with Latin, Old Greek and much European Philosophy). A real „challenge“ has been studying of on exact Mathematics and Physics based science at University of Technology in Vienna. The mostly commercial benefit of this has lasted some decades. The mental necessities, educated openness for Quality of Life, finding of sense of life and human values brought new questions.

The pure materialistic revenue lost his value. The learned profession as Business Analyst in IT (Information Technology) in connection with grate Mainframe Computers was not able to give enough challenge. As I got older the new educated specialists in modern IT couldn't believe that I am up to date in my profession. Own learning's got no value; only expensive certifications got important.

That motivated the author to start a general new level as scientist. Pure scientific interests have not been new for the author. At the end of his study it was recommended by his teachers but the payment was too low. 30 years experience in applied IT-Industry has brought beside a solid base for life a realistic point of view in academic IT work. Finally the mental challenge was not satisfying enough.

A general theory-based, scientific new start brought new motivations. The new found results have been a little bit naive at the beginning but in pure nature science and in these generally

new Information Sciences this fact was no bad thing. Now – after about 10 years science work – the author is read all over the world.

As Information Scientist the author is not yet well known. But his “Orientation” for the future of IT and human society seems to be useful. The real value of this paradigm and other scripts will be decided in future - as it is in every scientific life.

14. Competing Interests

The author declares that he has no competing interests.

15. Acknowledgements

No.



16. Literature

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